Athena Prototype: Status and Current Work

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Architecture Review

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What's going on?

- **"Early adopters" activities**
- **Gaudi Kernel development**
- **EDM design and prototyping**
- **Scripting**
- **Longer term discussions**

Athena Tutorial Activities *

- **ZebraTDRCnv**
  - —**Read existing SLUG simulation data. Done. Needs some polishing**
- **Tutorial Examples**
  - —**(at least) 8 available**
- **Web-based instructions (self-training)**
- **Installation and tools**
  - —**recently rewritten, “site-independent”**
  - —**fully integrated into SRT and our cvs tree**

Early Adopters Activities

- Liquid Argon Reconstruction port
  - —done. 1st attempt, went remarkably well!
- Tile Cal Reconstruction
  - —done, similar to LAr
- TileCal TestBeam
  - —starting, Data Views
- Generators integration
  - —ongoing, what is an “Event”?
- Graphics Integration
- XKalman++
  - —1st cut done
- AtlFast
  - —ongoing, several EDM and scheduling issues

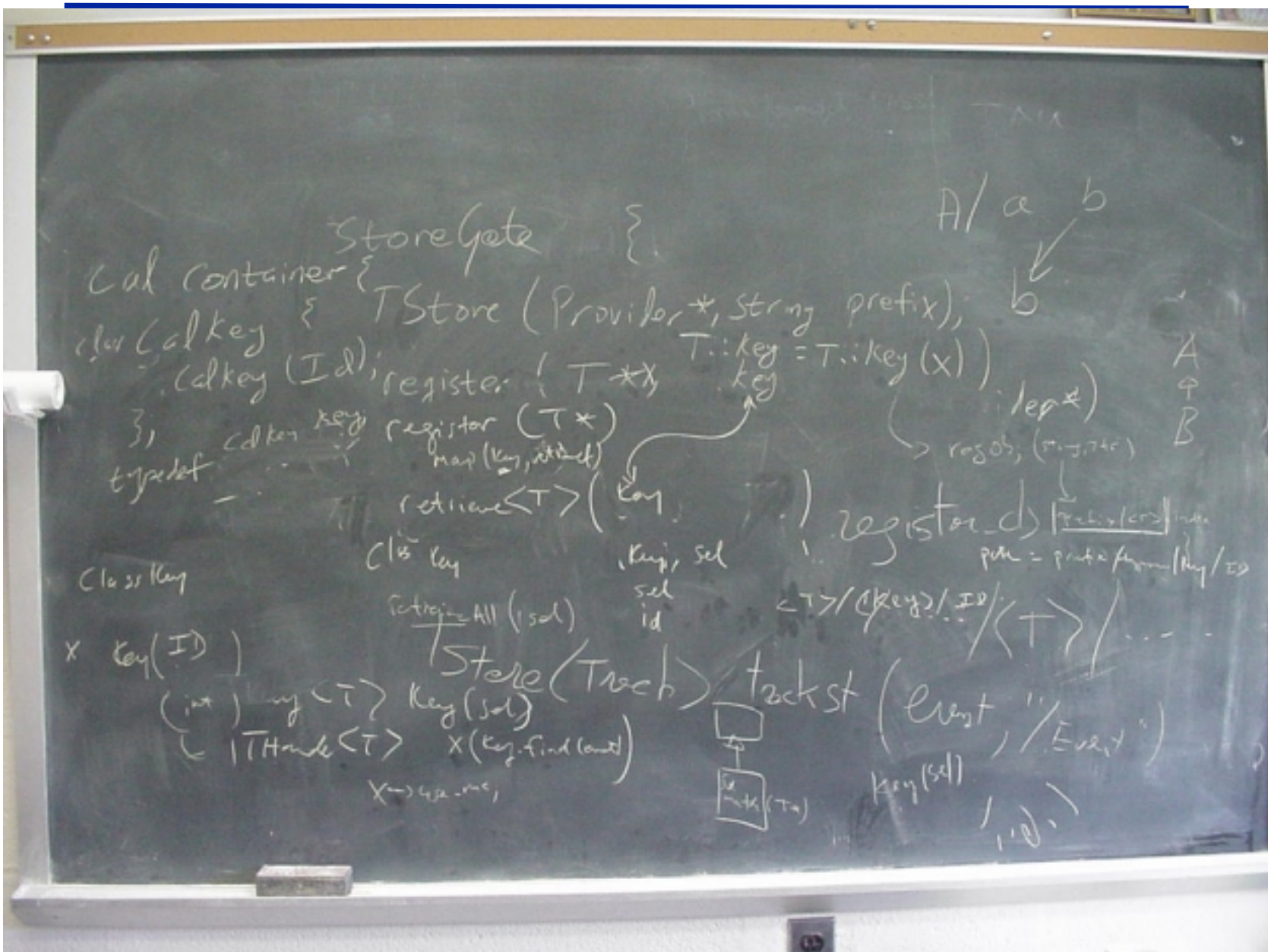
Kernel Extensions

- **Abstract Event Iterator (done)**
- **Bounded Properties (done)**
- **Particle Property Service (ongoing, meeting tomorrow morning)**
- **Root Histogram Conversion Service(ongoing)**
- **Sequencing/Filtering (done)**

Data Model Integration (May Workshop)

- We more or less agree on
  - **Helpers to support multiple logical "views"**
  - **Typed access (compile or run-time)**
  - **WORM store: can only add to it**
    - **ATLFast annotations, extend collections**
  - **DataObject relationships: no "forward pointers"**
    - **very interesting discussion on atlas-sw-architecture**
- **We have to converge on**
  - **What is returned? STL-like iterator, Handle, plain C++ pointer/ref**
  - **How do modules define what they want?**
    - **(Default) Keys, Selectors**

Data Model Discussions

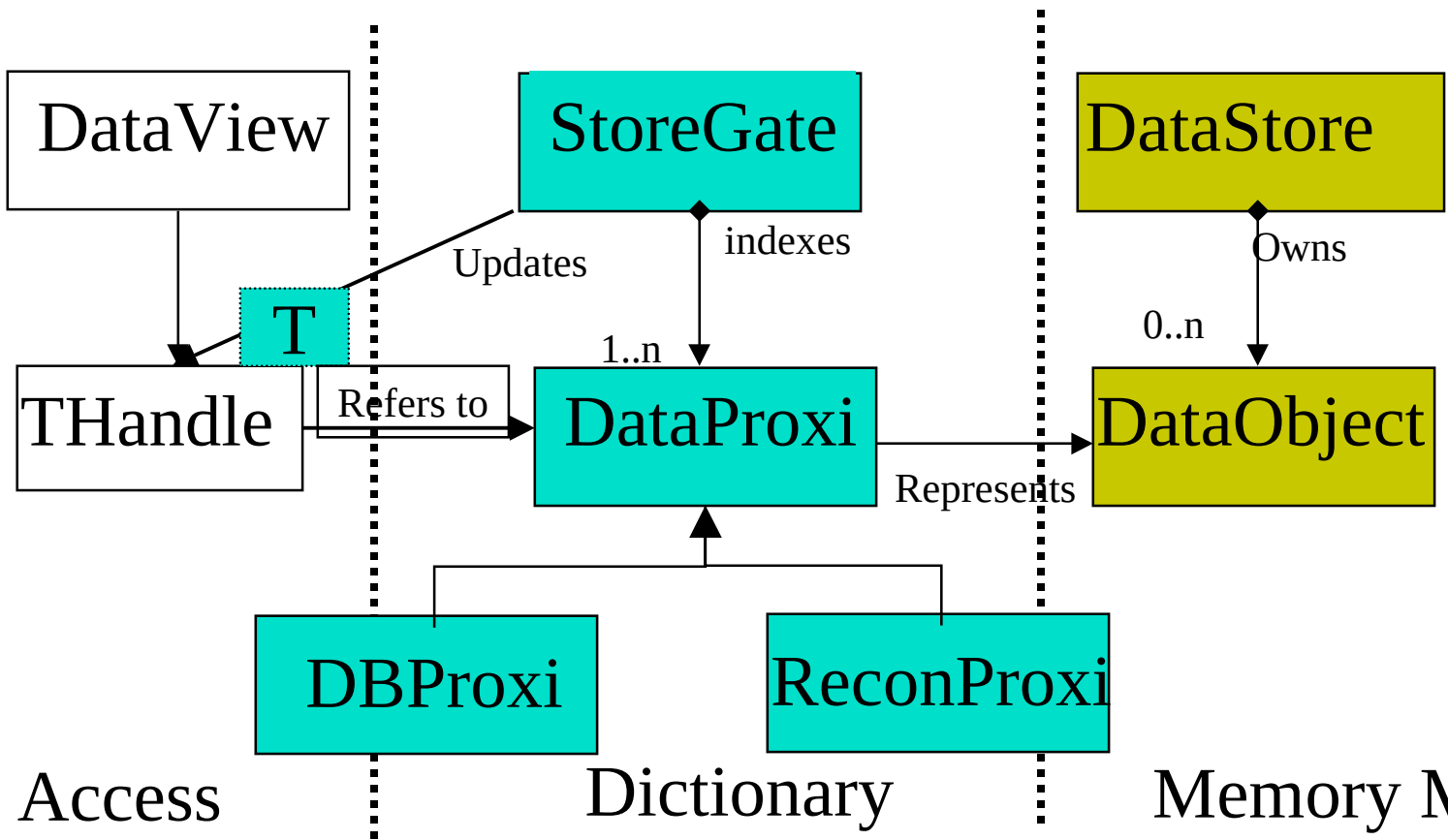


Data Models side-by-side *

	BaBar	D0	Gaudi
Data Obj	-	Chunk<Coll>	DataObject
Obj Ref	Proxy	LinkIndex LinkPtr<T>	linkID SmartRef<T>
Key	AbsKey	TKey	string
Handle	?	THandle	~SmartDataPtr
coll/iter	-	Chunk Selector	ObjVector
Trans/Pers	ProxyDict	d0Ref	Opaque Addr/CnvSvc
directory	-	-	IDataDir

Views, Handles, Proxies,….

- **View: client view of the stores, updated by the stores**
- **StoreGate: type-safe store access, implements cache policy**
- **THandle: smart ptr & iterators, basic client interface**
- **DataProxi: access control, build the DataObject on demand**
- **DBProxi, ReconProxi, …: concrete DataProxies**



StoreGate Prototype

- **Focus on Interface. Use Gaudi TDS to implement it**

- **Key: optional, distinguish data objects of same type**

```
Identifier id = at_id.lar_em();
LArCellContainer::Key key(id);
```

- **Selector: optional, selection based on DataObject content**

```
LArCellSelector* sel = new LArCellSelector(100);
```

- **THandle: smart pointer, provide iterator access as well**

```
THandle<LArCellContainer> myhandle(sel);
```

- **StoreGateSvc: type-safe access to Gaudi TDS**

```
StatusCode sc =
  storeGateSvc()->retrieveObject(key, myhandle);
cout << "No of Cells=" << myhandle->size() << endl;
LArCellContainer::const_iterator first =
      myhandle->begin();
LArCellContainer::const_iterator last =
      myhandle->end();
for (; first != last; ++first)
   float energy= (*first)->energy();
```

Scripting

Longer Term Design Discussions

- Integration with analysis tools
  - —event display (prototype)
    - Aravis, XML files(Wired, Atlantis, GraXML)
  - —PAW, ROOT, JAS etc
    - explicit invocation, shared memory, multiple threads?
- Kernel
  - —Application Mgr, Algorithms, Services, Tools and all that
    - extensible FSM (prototype)
    - reconstruction on-demand
    - data-driven processing

Conclusions

- As anticipated, bulk of the effort went into porting and packaging
  - —everything has been a moving target: Physics Software, Red Hat, SRT/CMT and Gaudi itself
- We are having a good time discussing, designing and prototyping, in particular in the scheduling, the scripting and EDM areas...
- … but we are not forgetting the burgeoning user community, the tutorials and the reviews ...